fit within the larger legal and policy contexts of the operational jurisdiction, and these comments are provided in the context of operations in the United States only. But wherever DJI engages, we are invested in making risk-based Remote ID a success, ensuring very high compliance rates for the rules of safe operation, and protecting the interests of innovation.

II. Foundational Issues

A. UAS Are Safest Form of Aviation Ever: DJI Flight Data Analysis

Regulation of UAS should be justified by actual risk, just like other aspects of aviation regulation. We believe by now everyone involved in UAS knows that UAS operations are extremely safe, from their own experience. To further inform that conclusion, DJI undertook to determine the approximate number of small UAS flights, and total flight time, in the United States in 2019, based on data available to it, as well as information provided in the NPRM.

1. Data Source

DJI's main ground control flight software family is known as DJI GO. The DJI GO family of applications has an opt-in anonymous user experience function which optionally provides to DJI information about how our products are used, so that we can improve them. This feature is only active if users select it, and data is associated with a randomly assigned user ID, so that customer privacy is protected. Because of these data privacy protections, we are not able to directly measure the total aggregate number of flights and flight hours, but with certain assumptions we can reliably extrapolate an estimated range of flight metrics for the United States.

2. Data Metrics

DJI examined its user experience software selections and determined that approximately 35% of its users in the United States choose to share user experience data with us. Flights in its DJI GO

database were identified with the United States if the IP address of the uploading user is geographically referenced to the United States.

The flight data shows that these users who chose to share experience data conducted 9,632,454 flights in the United States in 2019. A flight is defined as one takeoff and one landing, which provides a reasonably reliable estimate of flights even though not all takeoffs are matched with landings,[3] and in some cases a "takeoff" of a drone does not reach a significant altitude, or any lateral movement, before the user decides to terminate the "flight." Our user experience data also shows that the average flight lasts 7.1 minutes.

3. Extrapolation to the entire DJI fleet

Because only 35% of DJI GO app family users in the United States share user experience data with DJI, we extrapolate the total number of flights in 2019 across the DJI GO family to be approximately 27.5 million.[4]

DJI drones can also be operated with other ground control station software, including DJI Fly, DJI Pilot, DJI Flight Hub, as well as any number of software apps created by our SDK partners such as Drone Deploy and Measure. We conservatively estimate that these other software apps account for 15% of DJI drone flights, but none of the flight data from these apps would be included in the user experience data set we examined. Adjusting for this factor brings the total number of estimated DJI product flights to 31.6 million.

[3] The lack of a recorded "landing" could occur if, for example, a user decides to terminate a flight by hand-catching one of our smaller drones and tilting it over to stop the motors, rather than engaging in a flight landing sequence. We have noticed this practice is somewhat common with our Spark and Mavic Mini products.
[4] 9,632,454 ÷ 0.35 = 27,521,297.

4. Extrapolating to all United States the entire small UAS fleet

According to the NPRM, DJI products account for 36% of all UAS operating in the United States. *See* NPRM at 72,490. Extrapolating the flights attributable to DJI products to the entire U.S. fleet results in **87.8 million flights for all small UAS in the United States in 2019**. At an average duration of 7.1 minutes, total flight time of small UAS in the United States in 2019 can be estimated at over **10.3 million hours**.

This makes UAS unquestionably the safest form of aviation the world has ever known. By comparison, in the United States, general aviation experiences a fatal accident rate of 1.029 fatal accidents per 100,000 flight hours.[5] Although reducing accidents to zero is always the aspiration, the GA accident rate is deemed an "acceptable" level of safety, with no calls for tightening regulations from the public, Congress, or regulators that we have seen. If small UAS were to have such an accident rate, representing an "equivalent" level of safety as general aviation, there would be 103 fatal drone accidents each year. There are zero.

The NPRM recounts a handful of outlier incidents concerning purported UAS incursions near airports, a collision with a helicopter over New York City, stadium intrusions, etc. See NPRM at 72455-56. One could just as easily cherry-pick several dramatic incidents involving manned aircraft during the past year, to justify any number of draconian new restrictions and requirements for manned aviation. For example:

- In February 2019, a small plane crashed into a house in Yorba Linda, California, killing the pilot and four occupants of the home, and injuring two others. A nearby elementary school avoided even worse tragedy but had to close for the investigation.[6]
- In summer 2019, three commercial pilots from two different airlines were arrested over two weeks after being suspected of alcohol intoxication before their scheduled flights. This came at

[5] https://www.avweb.com/flight-safety/accidents-ntsb/u-s-civil-aviation-fatalities-increase-in-2018/
[6] https://www.theguardian.com/us-news/2019/feb/04/dead-after-light-plane-crashes-into-house-in-southern-california

the end of a decade in which at least 99 U.S. pilots were found with alcohol levels above the legal limit, according to the FAA.[7]

- In August 2019, a 61-year-old man was killed and his two daughters were injured, one critically, when a Cessna crashed into his house near Poughkeepsie, New York. The pilot of the small plane died and two passengers were also injured.[8]

- In December 2019, a woman on the ground suffered burns on 30 percent of her body when a small plane crashed outside New Orleans. Five people on the plane were killed and a sixth was critically injured.[9]

- In December 2019, a small plane crashed into a Maryland home, killing the pilot and sparking a fire. In this incident, no one on the ground was injured because the homeowners were on vacation.[10]

- In January 2020, 60 people were treated for minor injuries after a Boeing 777-200 with engine trouble dumped fuel over a five-mile stretch of Los Angeles, including a school playground where children were playing.[11]

One could conclude from these selected incidents that small planes are not safe to operate over residential homes or schools, and a new regulation is needed to protect against this risk, and that even airliners need new regulations (such as an alcohol breathalyzer interlock). But this anecdotal approach is not how risk-based regulation ought to work. The FAA should instead acknowledge, based on data available to it including the vast number of UAS registrations since 2015, that small UAS are already well-regulated, extremely safe, and do not require burdensome remote ID regulations.

Indeed, last year we undertook a deep and broad study of purported UAS sightings and collisions reported in the media and by aviation officials, and concluded that the vast majority of UAS sightings are not UAS at all, and even most of the *collisions* reported by manned aircraft pilots involve birds, bats, balloons, or nothing at all. *See* Elevating Safety, Part Two, available at

[7] https://www.washingtonpost.com/travel/2019/08/12/what-happens-when-an-airline-pilot-is-arrested-drinking-job/
[8] https://abc7ny.com/5475003/
[9] https://www.theadvocate.com/acadiana/news/article_e5b55d0c-29c2-11ea-9218-f7301d9dd8d5.html
[10] https://www.washingtonpost.com/dc-md-va/2019/12/29/small-plane-crashes-into-house-prince-georges/
[11] https://www.nytimes.com/2020/01/15/us/delta-dumps-fuel-los-angeles.html

https://www.dji.com/newsroom/news/dji-adds-airplane-and-helicopter-detectors-to-new-consumer-drones (Submitted as Exhibit A). The FAA ought to know better than to justify regulations by claiming in the NPRM, for example, that "[o]n average, six sightings of UAS allegedly conducting unauthorized operations are reported to the FAA each day." NPRM at 72455. This does a disservice to the collaborative work of the UAS Safety Team, which analyzed "sighting" reports and found so many of them lacking credibility or informative data. *See* http://unmannedaircraftsafetyteam.org/2017/12/12/unmanned-aircraft-safety-team-drone-sightings-working-group/ Additionally many "sightings" that are of actual UAS are of operations that the observer may not understand are in fact lawful and safe.

Our flight data analysis further underscores the point: out of an estimated 87.8 million small UAS flights per year in the United States, the FAA only has a small number of problematic incidents to cite, as well as a remarkably low number of investigations compared to the vast scale of UAS operations (2,002 investigations in FY 2018. NPRM footnote 102.). We offer our comments in the context of this remarkable safety record for UAS operations. Although DJI strongly supports the introduction of Remote ID to solve concerns related to security, safety and accountability, we must oppose unreasonably burdensome or costly outcomes, because they are not justified by the actual risks posed by small UAS.

B. Jurisdictional Overreach

The FAA's proposal goes too far by requiring performance by design, and even disabling the UAS from functioning, in locations where FAA has no jurisdiction over the operation. The NPRM proposes a set of regulations that exceed the FAA's authority in at least two respects.

First, the proposal would regulate, to the point of disabling takeoff, UAS that are operated indoors. In our experience, a substantial number of UAS are used in indoor applications, including school science and technology programs in school gyms, warehouse inventory tracking, closed-dome stadiums